IMPORTANT NOTICE:

PLEASE VIEW THE FOLLOWING PRESENTATION IN “NOTES PAGE” FORMAT TO SEE THE SUGGESTED BRIEFING NOTES THAT GO WITH THE SLIDES

Conserving Resources
Through Product Selection

Applying Affirmative Procurement Requirements to Civil Engineering Projects

Overview

- A product may be “environmentally preferable” for many different reasons
- This briefing will focus mainly on recycled-content and biobased products
  - They conserve resources by using recycled or renewable materials instead of virgin materials
  - Affirmative procurement of recycled-content products is **required** in Federal projects

What We Must Do

- Review and revise all specifications to enhance purchase of:
  - **Recycled-content products** listed by EPA
  - **Biobased products** to be designated by USDA
- Include requirements in all new contracts: A-E projects, service contracts, SABER
- Buy appropriate products for in-house use

These actions are part of an installation's overall affirmative procurement program

What is affirmative procurement?

- A program to increase Government purchases of environmentally friendly products
- Directed by law, Executive Order, and Air Force policy
- Described in detail in the Air Force "Guide to Green Purchasing"
  - Online at the AFCEE website - see "Resources" slides at the end of this briefing

What actions are affected?

Affirmative procurement applies to all appropriated fund purchases of EPA-designated products - from any source, by any means

- Bought by Purchase Request or with a government credit card
- For contract actions or in-house use
- From local purchases or central supply

What AF policy applies?

- CE and LG policy memo, 31 May 2000, “Air Force Affirmative Procurement Program”
- Engineering Technical Letter (ETL) 00-1 requires affirmative procurement in:
  - Construction projects
  - Service contracts
- Both documents are available on the AFCEE web page (see “Resources” slides)

What are the FAR requirements for engineering project managers?

- **FAR 36.602-1** lists **selection criteria for A-E firms**, requiring specialized experience and technical competence in energy conservation, pollution prevention, waste reduction, and the use of recovered materials as appropriate

- **FAR 36.601-3** says that **Statements of Work for A-E services** shall require the A-E to specify the maximum practicable amount of recovered materials, consistent with performance requirements, availability, price reasonableness, and cost effectiveness

What are the FAR requirements for the A-E firm?

- **FAR 36.601-3 requires the A-E** to consider energy conservation, pollution prevention, and waste reduction to the maximum extent practicable in the specifications

Why must we do this?

Executive Order (EO) 13101

"Greening the Government through Waste Prevention, Recycling, and Federal Acquisition"

- Takes legal authority from the Resource Conservation & Recovery Act (RCRA)
- Is now part of EPA or State hazardous waste inspections
- Installations can get a Notice of Violation for failure to comply

Are there any exceptions?

Recycled-content products need not be used if they -

- Do not meet technical performance requirements
- Cost more than comparable non-recycled-content products
- Are sole-source items
- Are not available in a timely manner

How are exemptions claimed?

- EO 13101 requires a written determination for each noncompliant purchase over $2,500
  - There is no prescribed format
  - Must be signed by organization commander
- The “Guide to Green Purchasing” contains a form which may be used to document purchasing decisions
  - On the AFCEE website

What products are affected?

- EPA designates the products we should purchase made with recycled materials
  - Comprehensive Procurement Guidelines (CPG) are lists of recycled-content “Guideline Items”
  - Many of the CPG items are commonly used in CE construction projects and service contracts
- Biobased products will be in a separate list that is managed by USDA, not EPA

What are the CPG Product Categories?

- Construction Products
- Landscaping Products
- Non-Paper Office Products
- Paper and Paper Products
- Park and Recreation Products
- Transportation Products
- Vehicular Products
- Miscellaneous Products

What Construction Products are on EPA's CPG list?

- Building insulation
- Polyester carpet
- Cement & concrete containing:
  - Coal fly ash
  - Ground granulated blast furnace slag (GGBF slag)
- Latex paint
- Floor tiles
- Laminated paperboard
- Patio blocks
- Carpet cushion
- Flowable fill
- Railroad grade crossings/surfaces
- Shower & restroom dividers/partitions
- Structural fiberboard

FOR DETAILED PRODUCT INFORMATION: VISIT THE EPA WEB SITE

http://www.epa.gov/cpg/products.htm

What Landscaping Products are on EPA's CPG list?

- Garden and soaker hoses
- Hydraulic mulch
- Lawn and garden edging
- Yard trimmings compost
- Food waste compost
- Landscaping timbers and posts (plastic lumber)

FOR DETAILED PRODUCT INFORMATION:
VISIT THE EPA WEB SITE

http://www.epa.gov/cpg/products.htm

What Park and Recreation Products are on EPA's CPG list?

- Plastic fencing for erosion control and safety barriers
- Playground surfaces
- Running tracks
- Park and recreational furniture
- Playground equipment

FOR DETAILED PRODUCT INFORMATION:
VISIT THE EPA WEB SITE

http://www.epa.gov/cpg/products.htm

What about service contracts?

Several CPG items are commonly used:

- Grounds Maintenance
  - compost and mulch
- Reproduction
  - paper, toner cartridges, printer ribbons
- Custodial
  - sanitary tissue products
- SABER contracts also need to include CPG requirements when applicable

How are CPG requirements expressed

Example: Building Insulation

Product	Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Rock Wool	Slag	--	75
Fiberglass	Glass Cullet	--	20-25
Cellulose Loose-Fill and Spray-On	Postconsumer Paper	75	75
Perlite Composite Board	Postconsumer Paper	23	23
Plastic Rigid Foam, Polyisocyanurate/ Polyurethane:			
Rigid Foam	--	--	9
Foam-in-Place	--	--	5
Glass Fiber Reinforced	--	--	6
Phenolic Rigid Foam	--	--	5
Plastic, Non-Woven Batt	Recovered and/or Postconsumer Plastics	--	100

How are CPG requirements expressed?
Example: Cement and Concrete

- Concrete composition varies with engineering requirements
- Instead of requiring specific percentages, EPA recommends revising project specifications:
  - Ensure that guide specs don't discriminate against the use of coal fly ash or GGBF slag
  - Revise guide specs to allow fly ash/GGBF slag unless the use is technically inappropriate for a particular application
  - Revise individual project specs to allow fly ash/GGBF slag
  - Use consensus specs from ASTM and AASHTO (see the EPA web page for a detailed list)

Misconceptions

- Recycled content products are inferior
- Environmentally preferable products always cost a lot more
- These products have limited availability
- Manufacturing recycled content products uses more energy than manufacturing products made of virgin materials

Energy Value of Various Wastes

Waste Element	Energy Supplied if burned	Energy for Virgin Manufacture	Energy for Recycle Manufacture	Energy Saved if Recycled
Newsprint	8	27	22	5
Corrugated paper	7	17	17	0
Tissue paper	8	12	14	-2
Aluminum	0	100	5	95
Steel	0	48	23	25
Glass	0	10	7	3

Source: "Energy from Municipal Waste Program - Program Plan," Office of Industrial Technologies, Office of the Assistant Secretary for Conservation and Renewable Energy, US Department of Energy, May 5, 1992, p. 12

Possible Product Benefits

A recycled-content product may have cost benefits as well as environmental benefits

Example: recycled-content lumber (plastic or wood/plastic composites)

- Reduces maintenance - no painting, EVER! (cost avoided, less work, less pollution)
- Material lasts longer and does not rot
- Eliminates coatings, preservatives and some pesticides (often toxic)
- Eliminates the use of a virgin resource and provides a use for recycled plastic materials

Waste Disposal Avoided by Using Recycled-Content Products

Product	Quantity	Waste Disposal Avoided
Polyester Carpet	89 houses	320,000 plastic soda bottles
Rubber Carpet Pad	4,000 Yds	400 tires
Ceramic Tile	24,000 SF	48,000 lbs of glass - 36,000 containers
Bathroom Partitions	300 Stalls	600,000 plastic milk cartons
Playground Surfaces	Six 24 x 24 playgrounds	1,720 tires
Picnic Tables	25	50,000 plastic bottles
Plastic Fence	500 feet	332,000 plastic bottles
Parking Stops	500	260,000 plastic bottles

Source: Government Sales Associates Internet site, www.governmentsales.com

Bitter Lake Community Center, Seattle, WA
Ceiling tiles made with recycled materials

Central Market, Seattle
Column with recycled steel and flyash concrete

Delridge Community Cent
Recycled-content partition and floor tiles

Golden Gardens Boardwalk, Seattle
Recycled plastic lumber

What products are on the biobased product list?

- The final list of biobased products has not been published by USDA
- The AARCC "Sourcebook" is our only clue
  - AARCC is the Alternative Agricultural Research and Commercialization Corporation
  - The "Sourcebook" is a list of products and companies the AARCC has invested in

www.usda.gov/aarc/aarcsrbk.html

What's in the Source Book?

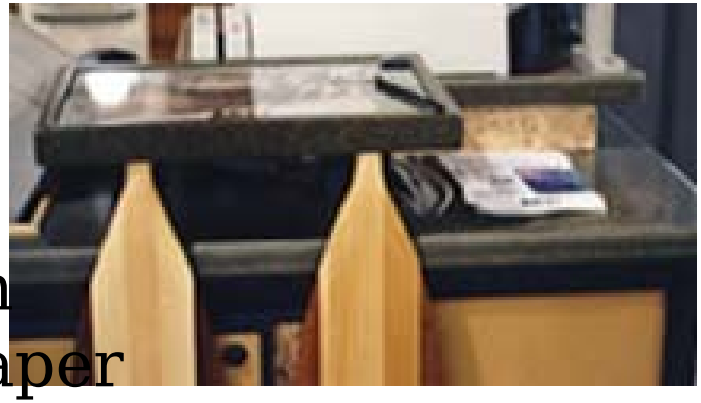
Examples of products offered by AARCC:

- Erosion mats; potting soil and compost; natural pesticides
- Oil absorbent and bioremediation products
- Starch-based biodegradable plastic adhesives, coatings and films, and package filler (similar to plastic "peanuts")
- Building panels - for load bearing walls and for cabinetry
- Composite materials resembling stone, for flooring and furniture
- Vegetable based release agent for concrete forms
- Automotive engine and transmission lubricants, windshield washer fluid, and antifreeze; ethanol fuel additive for diesel engines
- Lubricant for metalworking
- Cleaning products
- Tree-free kenaf paper that is also chlorine-free

Where could biobased products be used?

- Construction Contracts
  - Building panels, composite countertops, flooring, concrete form release agents
- Service Contracts
  - Custodial: cleaning products
  - Grounds maintenance: erosion mats, compost, natural pesticides
- Shops
  - Transportation: lubricants, windshield washer fluid, antifreeze, absorbents
  - Metal working: cutting fluids, absorbents

“Agriboard” structural panels in housing construction



Countertop made from “biocomposite” - a combination of soybean protein and recycled paper

Cleaning Products

- Cleaning products used in custodial service contracts can contribute to poor indoor air quality
- EPA has an online database for choosing environmentally friendly alternative products
  - "Cleaning Products Wizard"
  - **http://www.epa.gov/opptintr/epp/cleaners/select/**
- Many of the cleaners in EPA's database are biobased products

What if a product is on both lists?

If a product is on EPA's list and USDA's list, two types of alternative products exist

- Recall the legal requirement to "buy recycled" - but don't rule out all other options
- If a biobased product performs better, costs less or is more readily available, buy it
  - Other environmental effects can also be considered
  - EPA Region III HQ case study: indoor air quality concerns took precedence over recycled-content requirements

Beyond Recycled and Biobased…

- EO 13101 encourages the use of all types of environmentally preferable products
  - Energy efficient, water conserving, recyclable, non-toxic, low in VOC emissions
- Product selection should consider environment, performance, and cost
  - Use life-cycle cost to identify the best value
- The final decision is the project manager's
  - When CPG items are involved, the logic should be documented in the project file

What about data collection and reporting?

- No one wants to count the number or cost of CPG items purchased
- "White House Task Force on Recycling" is working on a more acceptable plan
  - Proposal: Report only the numbers of contracts that include CPG items
  - This would be done on DD Form 350, Individual Contracting Action Report
  - Also proposed: a pilot project for automatically tracking credit card purchases of selected products
  - Until new plan is finalized, current approach will continue

Summarizing the Requirements

- Whenever a CPG item is purchased:
  - Recycled-content products must be used unless an exemption is claimed (in writing, if over $2500)
  - Make sure the Contracting Officer knows that the contract includes CPG items
- Product selection is still up to the technical expert - the project manager
  - Be environmentally responsible. Remember that biobased product purchases are “encouraged”
  - Make logical decisions, and document them

Tips for Resource Efficient Projects

- In major construction, the project owner and designer each have a role to play
  - The project manager must help set goals and be informed enough to make sound design decisions
  - A-E firms must understand the project goals and requirements, and find the best design solutions
- Expand the traditional project team
  - Include environmental management “up front”
  - If confusion still reigns, consider hiring a paid consultant to guide the first “green” project

Tips for Resource Efficient Projects

- Existing tools can generate “green” ideas
  - Air Force Environmentally Responsible Facilities Guide
  - US Green Building Council “Leadership in Energy and Environmental Design (LEED)” Rating System
- Set goals: specific, measurable, attainable
  - “Purchase recycled-content products for 100% of the CPG items called out in the specs”
  - “Reuse or recycle 50% of construction & demolition debris”

Tips for Resource Efficient Projects

- Review and revise project specs to promote resource efficient practices
  - Understand and incorporate CPG requirements
  - Recycle construction and demolition waste. This supports base solid waste metrics and can actually **save** money
- Include detailed requirements in the specs
  - More than just “boilerplate” language
  - Requires education and effort, but prevents confusion when construction begins

Tips for Resource Efficient Projects

- Use existing specification tools
  - See the “Guide to Green Purchasing” (section 2.2.2.3), manufacturer’s info, or generic specification templates
- Look for products that meet established engineering standards
  - Alternative products can, and do, meet ASTM requirements and other standards
  - Performance and safety are not sacrificed

Tips for Resource Efficient Projects

- Educate the construction team
  - Whoever reviews the submittals, needs to understand the new goals and requirements
  - Don’t allow product substitutions to dilute the environmental benefits called out in the specs
- Try to document success
  - Resource efficiency, coupled with other initiatives, can earn recognition for the project
  - US Green Building Council “LEED” Rating System can be used to measure success in creating a “green building”

AFCEE Technical Resources

- For affirmative procurement requirements: AFCEE's Web page and the **Air Force "Guide to Green Purchasing"**

  www.afcee.brooks.af.mil/eq/ap/ap.htm

- For sustainable design: the **"Air Force Environmentally Responsible Facilities Guide"**
  www.afcee.brooks.af.mil/green/greenhome.asp

- For construction waste management: the **"C&D Waste Management Guide"**

  www.afcee.brooks.af.mil/green/resources/resources.asp

More Resources

- **EPA Fact Sheets** and "Lists of Manufacturers and Suppliers" - **www.epa.gov/cpg/products.htm**
- **"Guide to Resource Efficient Building Materials"** Updated annually. $28 - **www.montana.com/crbt**
- King County, Washington **"EnCompass" Website**: A virtual tour of buildings containing recycled-content products. Photos, product and specification info. **http://dnr.metrokc.gov/market/encompass/index.htm**
- Clean Washington Center: 1995 **"Recycling Plus Program Manual"** lists recycled-content products. **www.pnl.gov/esp/greenguide/cscport.pdf**

More Resources

- **USGBC LEED Rating System - Version 2.0** **www.usgbc.org/index.htm**
- **"REDI Guide to Building Materials"** online database - **http://data.oikos.com/products/**
- **"The Harris Directory"** database of environmentally preferable building materials - subscribe for a month, 3 months or a year. **www.harrisdirectory.com**

More Resources

- **Resourceful Specifications (formerly GreenSpec):** Guideline specifications to assist design professionals in choosing environmentally sound, or "green" building materials and techniques. Created by Siegel and Strain Architects for Alameda County, California. $40. **www.stopwaste.org/fsbuild.html**
- **WasteSpec:** Model Waste Specification for Construction Waste Reduction, Reuse and Recycling. Triangle J Council of Governments, North Carolina. $28. **www.state.nc.us/TJCOG/cdwaste.htm**

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